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ROCKS and MINERALS

A Magazine for Mineralogists, Geologists and Collectors

Official Journal of the Rocks and Minerals Association

May, 1942

Vol. 17, No. 5 **25c** *Whole No. 130*

THE ROCKS AND MINERALS ASSOCIATION

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Organized in 1928 for the increase and dissemination of mineralogic knowledge

To stimulate public interest in geology and mineralogy and to endeavor to have courses in these subjects introduced in the curricula of the public school systems; to revive a general interest in minerals and mineral collecting; to instruct beginners as to how a collection can be made and cared for; to keep an accurate and permanent record of all mineral localities and minerals found there and to print same for distribution; to encourage the search for new minerals that have not yet been discovered; and to endeavor to secure the practical conservation of mineral localities and unusual rock formations.

Ever since its foundation in 1928, the Rocks and Minerals Association has done much to promote the interest in mineralogy. It has sponsored outings, expeditions, formations of mineralogical clubs and the printing of many articles that have been a distinct contribution to mineralogy.

Those of our readers who are members of the Association can rightly feel that they too were sponsors of these many achievements that have helped to give mineralogy a national recognition. Among your friends there must be many who would like to have a part in the Association's work—to share with you the personal satisfaction, the pleasure, and the benefits of membership. Will you give your friends this opportunity to join the Association by nominating them for membership?

Each new member helps to extend the Association's activities—helps to make your magazine larger, better, and more interesting, and above all assists in the dissemination of mineralogical knowledge.

Some advantages of memberships: All members in good standing receive:

(1) **Rocks and Minerals,** a monthly magazine. (2) A member's identification card that secures the privileges of many mines, quarries, clubs, societies, museums, libraries. (3) The right to participate in outings and meetings arranged by the Association. (4) the right to display a certificate of membership and to place after their names a designation indicating their membership or to advertise membership on stationery, etc. (5) The distinction and the endorsement which comes from membership in the world's largest mineralogical society.

Mineralogical clubs which subscribe for **Rocks and Minerals** also become affiliated members of the Rocks and Minerals Association and enjoy all the advantages which such an affiliation affords.

A number of clubs hold membership in the Association, participate in the annual outings, and co-operate in many ways in furthering the aims and ambitions of the Association.

Affiliation with the world's largest mineralogical society cannot fail to increase membership, enlarge circles of acquaintanceship, and stimulate a keener interest in mineralogy.

A list of affiliated clubs will be found among the back pages of the magazine.

ROCKS and MINERALS

PUBLISHED MONTHLY

Edited and Published by PETER ZODAC

May 1942

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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

Chips From The Quarry

NO OUTING THIS YEAR

For the first time since the Rocks and Minerals Association began to hold annual outings, the affair this year will not be held due to war restrictions. We hope in this way to cooperate with our government in the conservation of gas and tires. However, local clubs and societies will no doubt hold outings in their respective communities. We do hope that those clubs which will hold outings as heretofore will curtail the distance to be travelled to less than 25 miles (the Mineralogical Club of Hartford is doing this). (The outing was planned for Sunday, May 24th).

There are often localities in one's own backyard which are worthy of visits even if good minerals are not available. Rock formations, geological phenomena of all descriptions, sand banks, clay and gravel pits, and excavations, often present most interesting sites for study and examination. Too often we have neglected our neighborhood as areas of no mineralogical or geological interest, being lured to fields afar by glowing accounts of majestic finds. No matter where one may live, rocks and minerals are all about him if he will but look and see. Some of the world's greatest cities—New York and Philadelphia for example—are also famous as important mineral localities.

Not so long ago we made a mineralogical and geological examination of our own little city and making notes on everything of interest. We examined outcrops on every street and all excavations that were brought to our attention. Though we did not see or find any minerals of outstanding importance, we did collect many specimens that were of more than passing interest, some of which were never known to occur in this area. Albite, autunite, basanite, biotite, garnet,

hornblende, heulandite, hyalite, jasper, magnetite, pyrite, quartz, stilbite, tourmaline are but some of the specimens collected. Geological formations were especially prevalent. Not only were the three great classes of formation present, Igneous, Sedimentary, and Metamorphic, but they were well exposed and all within the city's limits. In addition there were many glacial grooves, striations and polished surfaces, dikes, faults and contacts. There were also four little mines and a gravel pit.

If our little city can show so much of mineralogical and geological interest, your community may show even more. This year, therefore, confine your mineral trips to your own city or countryside.

Peter Zodac

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AN INTRODUCTION TO THE GARNET

By JOHN N. TRAINER

This is a sketchy statement of the reasons for my special interest in collecting and studying garnets. It is a birds-eye view of an alluring field for an amateur mineralogist.

My mother started a collection of minerals with a purchase from the exhibit at the Centennial Exposition in Philadelphia in 1876 in which there were many Pennsylvania Garnets. I inherited it and stored it first in the attic and then in the barn except for a few specimens displayed around the house. The barn burned down and most of the collection was destroyed. But among the specimens in the house was a piece of mica schist, four by four by eight inches, with three large garnets on it, which we used as a door-stop in the living room for about fifteen years. It answered the purpose very well and was never damaged. It came from Leiperville, Delaware County, Pennsylvania, a source of fine garnets. When I began to reconstruct Mother's collection, a few years ago, I catalogued this specimen Number One for two reasons; first because my family came from that part of Pennsylvania and second because it seemed fitting and respectful to elevate it from its lowly position as a door-stop to the first item in the new collection. This is the sentimental background of my choice of the garnet as the mineral on which I am now concentrating.

Mr. Harry A. Warford, of Philadelphia, who also concentrates on garnets, says that as a boy one of his most cherished possessions was a ring with a carbuncle setting which an uncle gave him as a birthday present. The big red garnet was the boy's own selection. Some years later, in 1882, while visiting in a suburb of Philadelphia, he happened to notice an outcrop of mica schist in which garnets were plentiful and easily dislodged. He knocked out a handful and thus began a long mineral collecting career. These garnets were the nucleus of a general collection which grew so large (he says it was a ton by actual weight) that he was afraid it would go through the floor into the cellar. So he sold it and with the money bought garnets and nothing but garnets. He went back to his first love. This is the sentimental background of his choice of garnets as a specialty.

But sentiment was not my only reason for collecting garnets. Their colors, crystallography, genesis, composition, nomenclature, legends and history are most interesting.

For several years I have been concentrating on minerals from Tilly Foster, N. Y., but the collection is not much to look at, few locality collections are; it is drab, gray and colorless. Garnets are by contrast very colorful. Consider the fiery red of pyrope, the lilac and violet of rhodolite, the pink and rose of rosolite, the wine-yellow of topazolite and the rich green of andradite var. demantoid and uvarovite. As Mr. Warford says, blue is the only color of the rainbow which is not seen in garnets. There are also the rare transparent colorless, the less rare white and the opaque jet black melanite garnets. The colors of garnets fill the eye.

The crystal system of garnets is isometric with full symmetry and well within the mental range of the beginner. There are seven distinct forms in the system, of which the dodecahedron is the commonest in garnets, but combinations of the forms are frequent and as many as ninety-six faces can be seen on one crystal. Looking over my collection, I see the:

Dodecahedron.

Trapezohedron.

Trapezohedron modified by the dodecahedron.

Dodecahedron modified by the trapezohedron.

Hexoctahedron.

Dodecahedron modified by the hexoctahedron.

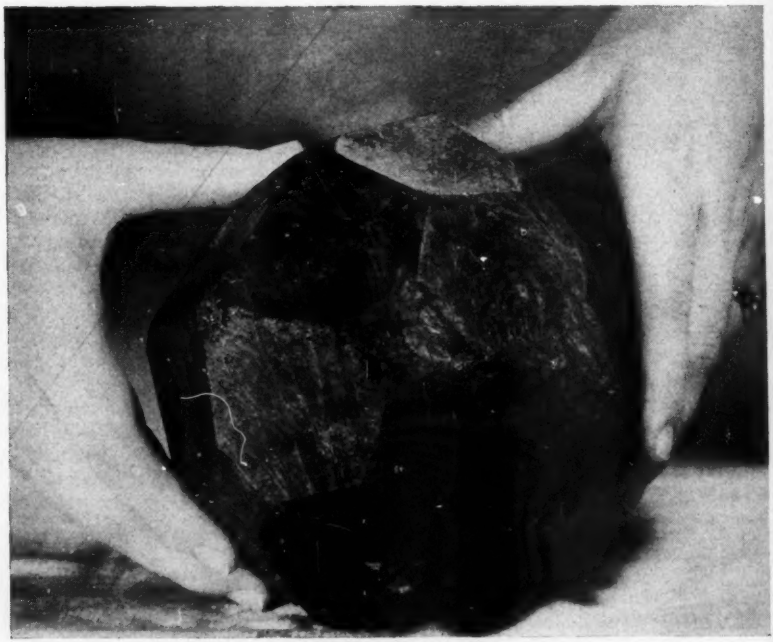
A combination of doecahedron, hexoctahedron and trapezohedron.

Vicinal trigonal and tetragonal trisoctahedron.

Hexahedral and octahedral faces.

All words of Greek derivation. You can hear the tramp-tramp of the ancient Greek phalanx when you read this list aloud. It is to the mouth what the colorful garnets are to the eye.

Large symmetrical crystals like those from Salida, Colorado, from Pennsylvania and the ten pound Kunz garnet from the heart of New York City on display at the American Museum of Natural History are a great satisfaction in con-



Garnet var. Almandite

Found in 35th Street near Broadway, New York City.
Diameter 6 inches. Weight 9 lbs. 6 ozs.
Now in the American Museum of Natural History, New York City.

(American Museum of Natural History photo)

trast to the tiny crystals that are so numerous in my Tilly Foster collection. Size is not important, of course, but hefty big garnet crystals feel good in the hand.

"Garnet-darn it" is a rhyme taken from an article in a recent issue of ROCKS AND MINERALS to express the author's reaction to the varying composition of garnets. Chemically there are three prominent groups described as the aluminum, iron and chromium garnets. The first, or aluminum group, is divided into four species known as grossularite, pyrope, almandite and spessartite, in which the bivalent elements are calcium, magnesium, ferrous iron and manganese. The second or iron group, called andradite, is calcium-iron with magnesium, titanium and yttrium sometimes included. The third or chromium group, uvarovite, has calcium as the bivalent element with chromium. Seldom, however, does the composition of garnets correspond to the simple theoretical formula. Garnets are a mixture of two or more or even all of the molecules in varying proportions, which explains the "almandite-spessartite" for instance, but $(SiO_4)_3$, is the only common molecule in all of them. Old man molecule, $(SiO_4)_3$, has a harem which is putting a strain on constancy (the garnet is an emblem of constancy). The difficulty in telling the ladies apart adds interest to the study and if the job is never done, so much the better. You always have something ahead of you.

The garnet is an excellent example of substitution. It is very subject to alteration by metamorphism and fusion, by percolating waters and vapors containing carbon dioxide and certain silicates and alkalies causing displacement and replacement of elements in the garnet. Other distinct minerals have been found in a fused mass of garnet which show no relation to the garnet other than that their constituents were derived from it.

Garnet (Grossularite) var.Essonite
Minot, Maine
J. N. Trainer collection

(American Museum of Natural History photo)

If in doubt about the composition of your garnet, have it analyzed or X-rayed. "Garnet-darn it" is a challenge to the chemically-minded student of garnets.

The origin, occurrence and associations of the garnet, which is a common and widely distributed mineral, require much study for a good understanding of the subject. To begin with, I favor a garnet in the matrix wherever possible, rather than isolated crystals, so as to see how it picked up it constituents as it went through its life, Looking over my almandites for instance I see matrices of mica schist, quartz, feldspar and chlorite from which they picked up their iron and alumina. They also occur in some igneous rocks. The calcium-aluminum garnet grossularite, occurs in metamorphosed calcareous rocks from which it derived its calcium content. These rocks are altered by local igneous or general metamorphic processes and the garnet is found in the contact zone of intruded igneous rocks and in the crystalline schists. The matrices of some of my andradite, the calcium-iron garnets, show calcite and magnetite from which they derive their characteristic elements; my specimen of melanite is in an igneous rock; my demantoid (var. of andradite) is on serpentine. Pyrope is formed from magmas containing magnesium and the serpentines derived from them; hence the magnesium content. Spessartite the manganese garnet, occurs in granitic rocks and quartzite; one of my specimens is in rhyolite. Both my uvarovites, the chromium garnet, are on a matrix of chromite.

To quote Dana, "the garnet is usually an accessory rock-making mineral, being found in a great variety of rock types,

Andradite Garnet var.Polyadelphite
Franklin, N. J.

(Photo by Ward's Natural Science Est., Inc., Rochester, N. Y.)

more particularly in mica, hornblende and chlorite schists and in gneiss; in crystalline limestones and in contact zones; also in granite, syenite, and occasionally in various volcanic rocks; sometimes in serpentine. It also at times is found in massive form as a prominent constituent of a rock." I emphasize the words "great variety" in the above quotation.

The nomenclature of garnets is interesting. The generic name is from the Latin "Granatus", like a grain, and from "Pomegranate", the seeds of which are small, numerous and red in allusion to the aspect of the crystals. Alburtus Magnus, a Dominican monk, writer and scientist, first used the word "Granatus" in the twelfth century. Grossularite was named from the gooseberry and was suggested by the pale green thirty-six sided garnet from the Wilui River in Siberia, also known as Wiluite. Pyrope is from the Greek word for fire. Almandite gets its name from Alabanda, an ancient city in Asia Minor whence garnets were traded to Rome. Rhodolite is named for the rhododendron in the Great Smokies. Melanite is from the Greek word for black from which the word melancholy is derived. Colophonite is named for the resin colophony because of the resinous luster. And so on with the other species and varieties. A study of the nomenclature of garnets is a great help in memorizing and understanding them.

The garnet has a long human history. It was known to the ancients who cut and polished it for ornaments and wore it as a charm to cure bodily ills, reconcile differences between friends and bring good luck. Pliny, the Roman naturalist who perished in the destruction of Pompeii in A.D. 79, recognized the garnet and called it Carbunculus because of its fire-like reflections in the sun. Another ancient name is hyacinth but both carbunculus and hyacinth may, however, have been used for other red gems like zircon and ruby. The Talmud relates that Noah illuminated the ark with a carbuncle; it must have been a black-out for the family. It is recorded that the Emperor Tiberius had such implicit faith in a hyacinth mounted on the head of a coiled serpent and worn on his hand as a ring that he stood on the top of the highest of Rome's seven hills during a thunderstorm and defied the elements. "Can you imagine such bravery?", says my friend Mr. Warford, "my poor old grandmother would hide her scissors during a thunderstorm". At any rate, the elements did not harm the Emperor. Legends like these and the history of the garnet are good subjects for further study.

White garnets (Grossularite)

Chihuahua, Mexico
J. N. Trainer collection
(American Museum of Natural History photo)

I shall not say anything now about my collection which was begun only a year ago; Mr. Warford has the floor. He writes me as follows: "Among my mineralogical friends and correspondents many were specializing in micro-mounts, quartz, beryl, fluorescence and numerous other branches but none in garnets. The garnet was actually thrust upon me. It was up to me to redeem it and I hope I have partly succeeded; at least I have tried. A little acorn sown as a common garnet in 1882 has grown into an adult oak of thousands of crystals with over eight hundred catalogued items representing occurrences from nearly four hundred localities".

I have only just been introduced to garnets and have a long way to go in collecting and in study to catch up with Mr. Warford—but I am on the way.

IRON ORE DEPOSITS ON THE KASAAN PENINSULA, ALASKA

Deposits of iron ore on the Kasaan Peninsula in southeastern Alaska have been confirmed as extensive and high grade by the Geological Survey, United States Department of the Interior.

First appraised in 1917 during the World War as possible sources of iron, the deposits now are believed to be much larger than the earlier estimates of minimum reserves of 10,000,000 tons.

Field examinations of more than a dozen of the ore bodies, classified as magnetite, indicate that the iron content may approach 60 percent. Although no adequate specific determinations have been made of the tenor and impurities in the iron ores of Kasaan Peninsula, the copper content is estimated at about 0.5 percent, and the sulfur content may be about 1.5 percent.

Many of the individual bodies of high-grade magnetite probably contain between 25,000 and 2,000,000 tons each, and some of the bodies may contain even more than 2,000,000 tons, it was reported by the Geological Survey. These substantial deposits, if their grade holds with depth, may have national significance in connection with the large hydroelectric installations at the Grand Coulee and Bonneville power projects. The availability of large quantities of cheap electric power in the Pacific Northwest area, coupled with the needs for iron and steel of the Nation's war machine, focuses attention of expanding industrialization not only on the Kasaan deposits, but also on similar deposits on Texada and Vancouver Islands, British Columbia, and in the vicinity of Copper Mountain, Prince of Wales Island, Alaska.

The Kasaan Peninsula is a long, narrow peninsula on the east side of Prince of Wales Island, the southermost large island of the Alexander Archipelago of southeastern Alaska. It separates Kasaan Bay on the southwest from a large waterway, Clarence Strait, on the northeast. No point on the peninsula is more than 3 miles from salt water. Kasaan, a predominantly native village about 35 miles by water nearly west of Ketchikan, is the only permanent settlement.

Freighters loaded with iron ore could move through the comparatively calm inland waterway to a United States port on the west coast. Shipping rates are favorable, as indicated by the shipment of crushed limestones from Alaska via this route to Puget Sound ports.

On the peninsula, extensive contact zones have been formed at and near the boundaries between granitic intrusive rocks and older stratified rocks, particularly limestones, according to geologic studies of the area. The iron deposits are bodies of magnetite in these contact zones.

In these deposits, metallic minerals other than magnetite include some chalcopyrite (a copper ore), pyrite (iron pyrites or "fool's gold") and pyrrhotite (an iron sulfide compound, often containing nickel). Locally, where chalcopyrite was relatively abundant, the contact material has been mined for its copper content.

In fact, the geology of the Kasaan Peninsula was studied and mapped in 1907 and 1908 by the Geological Survey, and the mineral deposits were then examined in considerable detail. However, in those days there was no possibility that they could be worked in the near future for iron, and consequently the emphasis of these studies was placed almost entirely on the possible value of the copper that the ores contained.

Although the 1917 World War appraisal indicated the presence of significant amounts of iron ore, none has yet been shipped purely for its iron content. Some of the ore mined for copper in 1905, 1906, and 1907 apparently also contained about 0.033 ounce of gold and 0.263 ounce of silver per ton. These precious metals are reported to exist in the ore in proportion to the copper con-

tent, and it seems likely that gold and silver therefore are much less abundant in the iron ore.

Neither titanium nor phosphorus is known in the Kasaan iron ores, and these detrimental elements probably are not present in appreciable quantities. According to the Geological Survey, these elements commonly are much more abundant in iron ores of the magmatic (crystallized and fused rock) type than in those of the contact type found here.

Brief examinations of some of these deposits were made during the field season of 1941 by John C. Reed and George O. Gates, geologists of the Survey, as a start on a comprehensive study of the deposits to be continued and completed as rapidly as possible.

A COPPER MINE IN VERMONT

By L. B. BAILEY

Berkshire is a small village in the northern part of Vermont (in the northeastern part of Franklin County). About 1½ miles north of the village, on an old abandoned farm, is an old abandoned copper mine. One should inquire in the village for directions how to reach the locality.

In the 10th Report of the Vermont Geological Survey for 1915-1916, p. 199, is the following item:

"In Berkshire there is said to be a large deposit of chalcopyrite and bornite. The Vermont and Boston Mining Company was at one time at work on this deposit, sinking a shaft 100 feet and drifting 85 feet. Some thesis work, done at the Mass. Institute of Tech., showed the ore to carry 1.42% copper. This was obviously too low for profitable working in this region at least."

A letter addressed to Mr. C. A. Bowen, Town Clerk of Berkshire, requesting information on the mine, brought the following reply, dated October 4, 1941:

"In regard to the "Copper Mine" in Berkshire, I do not know when this property was first prospected but in 1899 a company was formed, known as the Vermont and Boston Copper Mining Company, and took a deed to the property and worked it until about 1906, then ran into financial difficulties and the property was sold to George H. Moore at a sheriff sale in 1907. Since then the farm has been sold but Mr. Moore reserved the mine shaft and mine buildings and a space about 100 feet square surrounding the shaft house. The buildings are about all gone now.

"I have always understood that there is a surface pocket of very rich copper. The old company went broke trying to find the main vein.

"The property is situated about 1½ miles from this office."

A recent visit to the old mine resulted in the finding of the following minerals:

Bornite: Massive, as veins in a gray talcy schist.

Chalcopyrite: Massive, associated with bornite, pyrite, and pyrrhotite in talcy schist.

Limonite: Brown stains on rock.

Malachite: Greenish-blue incrustations on rock.

Melanterite: Greenish efflorescences on quartz.

Muscovite: Small scales in talcy schist.

Pyrite: Massive, with bornite, chalcopyrite, and pyrrhotite.

Pyrrhotite: Massive, associated with bornite, chalcopyrite and pyrite.

Quartz: Milky, massive, in schist.

Rocks and Minerals Free Samples Fund

Founded to cover cost of free copies of the magazine to be distributed during the New Jersey Mineral Show to be held later in the year.

Contributions Received From

Rocks and Minerals	$10
John Albanese, Newark, N. J.	$10
Miss Violet Miller, Brooklyn, N. Y.	$ 2
Miss Evelyn Waite, Crestwood, N. Y.	$ 1
Total	$23

BALANCED ROCKS, PRODUCT OF MAN OR GLACIER?

By ALLISON ALBEE

Throughout the hilly surface of Westchester County in New York State, about 25 miles from New York City, are found many evidences of the Glacial Period of the Quaternary Era. According to Dana's map[1], the direction of the ice caps movement in the southerly part of New York State was roughly south east. Ample evidence in the form of scratches in the surface of the smoothly rounded local outcroppings is found to bear this out. These were made by stones of great weight, some of them as large as houses[2], that were carried along with the ice as it progressed. Most of the large boulders thus transported still remain in the original positions where they were dropped along the glacier's course along with the vast mass of drift that was transported southward as the ice moved southward. Dana states that in checking with parent formations[3] it has been proved some glacial boulders have travelled distances as great as 200 to 400 miles in the eastern part of our country. In Europe the rate of movement of the glacial ice in the Alps is about a mile in fourteen and a half years[4], the movement being more rapid during the summer months. Glacial boulders throughout this area are easily identified by their rounded forms and smooth surfaces that were acquired during the long southward journey. By contrast the local stones that have been split from mountainsides or parent ledges by frost or other agencies retain their sharp corners and more or less plane surfaces.

Among the many boulders scattered throughout the hills and valleys of the county are a few whose odd circumstances or positions give rise to speculation as to whether the glacier itself was capable of such pranks. One of the attractions that never fails to capture the attention of the visitor to North Salem, a little hamlet near the Connecticut State line in the northern part of the county, is a large boulder weighing approximately sixty tons. Situated at the top of a hillside overlooking the town's largest river, it sets well off the ground resting upon the points of seven pieces of limestone rock which stand upright in the ground beneath it. A short distance over the line in Putman County near Oscawanna Lake, perched atop a little knoll that rises in a meadow, is a large boulder resembling a tilted half orange with its flat side upward. Although its circumference is thirty-three feet and its thickness five or more feet its balance is so perfect that it may be set to rocking without the aid of a lever of any kind. Its existence was revealed to the author in an account and picture of it that appeared in an issue of the *American Journal of Science* dated 1822. In relocating it, an old man who was born in the vicinity and had lived all his life there stated he had never heard anybody in the vicinity mention that this boulder was movable. A couple of miles further north on the old Sunk Mine Road is a smaller boulder atop a little knoll at a road junction. Although it weighs many tons, it may be rocked by hand. Turning southward to the north border of the great Croton Lake Reservoir in the north central part of the county of Westchester, another great boulder of pegmatite is to be seen. It is perched upon a ledge of natural rock about 400 feet above the reservoir level at the edge of a great hilltop. This boulder has given its name of Cobbling Rock to the large estate known as Cobbling Rock Farm by which it is located. The girth of this stone measured horizontally is 43 feet 7 inches while the height from its base rock is 12 feet. At dusk it presents an imposing sight outlined against the sky on the hilltop. The points of contact with the base rock appear to be three in number none larger than a man's fist. It was impossible to move this stone during a visit to it but testimony furnished by a 92 year old man who was born in this vicinity, is given. In 1883 as a result of being told by his father that this rock was movable, two boys and the narrator visited it one Sunday morning and by

1—Twenty ton rocking stone of dark gray gneiss south of Shrub Oak, N. Y. Stones are wedged beneath the south side to prevent movement.

2—Dolmen at North Salem, N. Y. View looking south. Red granite boulder weighing 60 tons or more mounted upon pointed pieces of limestone.

3—Chatsworth Rocking Stone. Rockingstone Avenue, Larchmont, N. Y. View looking east. Height 12½ ft. Horizontal circumference 49 ft. 8 in. Gray gneiss.

4—The Cobbling Rock, looking north. Rests on an area of less than one square foot (over 400 feet above the Muscoot River) near the edge of a hill.

5—Oscawanna Lake Rocking Stone. Mr. John Rosch (85 years old), original member of the New York Mineralogical Club, at left.

6—Oscawanna Lake Rocking Stone. View showing point of contact with base ledge as it appears at present. Gray gneiss boulder, horizontal circumference 33 feet, vertical circumference 31 feet. View looking north.

pushing against it from the north the two boys were able to cause it to rock. Additional information tells this boulder's balance was later destroyed by persons seeking to dislodge it and roll it down the hill. Two or three miles from this spot is another boulder of about twenty tons atop a little rock slope on which it rests. No longer movable because of small wedge stones placed beneath it for some purpose, a newspaper article and wood cut published in one of the local papers in the 1880's[5] told of it when it was movable. The balance of this boulder was described as being so exact that storms would set it in motion, a circumstance also mentioned in connection with another rocking stone[6] in the eastern part of the county which was not visited for lack of time. Likewise not visited was one shown on a stone plateau on the County Park Commission's map of Poundridge Reservation which is called the Dancing Rock. In the village of Larchmont, in the southern part of the county near the shore of Long Island Sound, is the Chatsworth Rocking Stone, a huge boulder of some 100 tons. All though no longer movable its memory as a rocking stone has been preserved by the creation of a small park about its base, and the naming of the street in whose middle it stands, after it. Oldsters living in the vicinity still recall that many years ago before blasting for water pipes in the nearby streets destroyed its balance, that this great stone could be moved. One man by pushing vigorously against its side used to be rewarded by a rumbling sound as it moved slightly.

Keeping in mind the geological circumstances let us now briefly consider the following: Starting with the first described stone in North Salem; In an old issue of the *Century Encyclopedia*[7] there appears in connection with the word Dolmen a wood cut of a large boulder perched upon the points of smaller stones in a manner identical to that of the North Salem boulder. Descriptive information about dolmen states these stones are of greatest historical interest as they represent the first evidence of engineering by mankind. Found in Africa, Europe and Asia besides the British Isles, they represent the Neolithic Period and are regarded as sepulchral stones by some. They were highly venerated by the ancients and the local Historian Bolton mentions[8] that the Indians used them in connection with their religious rites. Next considering the half orange shaped rocking stone near Lake Oscawanna the account and picture of it appearing in 1822 both showed and discussed this stone being mounted on a base stone about a foot and a half high. Although at the time of the visit no base stone was present, one lay nearby that might have answered the purpose of the one described. The fact the base was removed may be explained by that part of the text that stated six men with crowbars had been unable to dislodge this stone. They may have later succeeded in toppling it off its pedestal but not down the hill. Granting that the large stone was formerly mounted on a pedestal which the story and present indications seem to indicate, it seems rather unusual that the action of a glacier would deposit a huge boulder atop a very small one in a conspicuous position on a hilltop at the same time arranging for such perfect balance that man could rock its many tons with comparitive ease.

Before the coming of the white man in the 1600's and thereafter until driven out by him, Westchester County was the home of many Indian Tribes. Unfortunately the local Algonkian Indians were not the type that left evidencee of their existence through the years as did those of Mexico and South America. Very little indeed is known of their history, locally, and among the scant facts there is record of a peculiarly shaped stone, now in New Rochelle, around which they used to gather, build fires, and hold some sort of ceremonies[9]. Likewise in visiting the rocking stones it was observed that in almost every instance they were located away from any similar stones and invariably were at the top of a slope in a conspicuous position. Whether the large stones placed across the Croton River by the Indians, as fish weirs[10], would offer sufficient proof that these people were

stone movers to any extent is conjecture. Whether their witch doctors possessed knowledge of the art of stone balancing and dressing by heating and throwing water on them is also not known, but the sides away from the weather seem to have been broken as the pictures show in the case of the Cobbling Rock and the Shrub Oak stone. The matter of the wind moving them and the sound made by moving also offers an interesting opportunity for thought, but whether man-placed or natural phenomenon, these oddly placed boulders provide a most interesting study. It would be of interest to the author to know whether any similar circumstances have been observed elsewhere in the United States.

1 *The Geological Story,* by James D. Dana p. 251.
2 Ibid. p. 253 also: In Shrub Oak, near the northern border of Westchester County, a good example of such a rock is found. Composed of yellowish granite it measures 40 x 80 feet being about twenty feet high. As a curiosity it was the favorite haunt of picnicers of two or more generations ago. It is alleged to be the largest boulder in New York State. On one occasion a square dance was held on top of it.
3 Dana. p. 253.
4 Ibid. p. 80.
5 *The Peekskill Blade,* March 12, 1886.
6 *History of Westchester County,* by Alvah P. French, Vol. II, p. 793.
7 *The Century Dictionary and Encyclopedia,* Vol. II, p. 1725, 1906 edition.
8 *History of Westchester County,* 2nd edition, Vol. I, p. 768. By Robert Bolton
9 Quarterly Bulletin of the Westchester County Historical Society, Vol. 4, No. 2, p. 29. The Image Stone.
10 French's *History of Westchester County,* Vol. II, p. 1018.

'INEXPENSIVE PORTABLE FLUORESCENT LAMP'

By H. L. CHANDLER
No. Springfield, Vt.

The desire to do some night-prospecting for fluorescent minerals such as the much-needed scheelite (a tungsten ore), autunite and others, led yours truly to get busy devising a cheap, light-weight, handy and portable fluorescent apparatus. The results were most gratifying and here's a description of the "brain child" we sired.

A standard 5-cell Eveready flashlight with enlarged focusing head was purchased. The bulb which came with it was exchanged for a high-intensity Mazda bulb which has shorter life but gives more light. The clear, transparent lens were replaced by a piece of Corning purple filter glass No. 597 cut to a 3-inch diameter disc and ground down to a ⅛-inch thickness.

The total cost of around $5 is reasonable compared with many similar higher-priced, fancy gadgets on the market which, in turn, are apt to be bulky and not too compact and light to carry.

Focusing the beam on the side walls of quarry or pit enables one to pick up the ghostly fluorescent glow of many minerals up to 50 feet away.

The author assembled the pieces during the late fall and in the past few months has been busy going over his entire collection, in the dark, looking for anything which glows.

Barring tire and gasoline shortage and awaiting the passage of the "mud phase" of New England's back roads, we are just itching to hit the fluorescent trail.

There may be dozens of other "rock-pickers" and mineral-minded ones who have already designed such apparatus for night prospecting. We lay no claims to originality nor are we seeking patent rights. If the idea sounds good, "Go thou and do likewise." Have a lot of fun, and incidentally flash the beam sometime in the dark at a set of human teeth, a patch of mustard stain on your chin after a ham sandwich or on a bottle of paraffin-base oil or hair tonic containing quinine. Many common things react to its light which you may not have suspected.

CLEAVAGE IN QUARTZ

By A. C. HAWKINS

There are probably many mineral collectors who do not realize that quartz possesses cleavage. To those accustomed to thinking of cleavage in terms of the perfect types possessed by mica or calcite, the imperfection of what is indicated to be cleavage in quartz would seem to render it quite inconsequential.

Those who have broken any large numbers of quartz crystals of the best quality will at once agree that the curving surfaces and concentric ridges marking the conchoidal fracture are the strongest characteristics shown. But there also come to notice other broken surfaces which are relatively plane or flat ones, which are often observed to be parallel to prominent crystal faces.

If you will look carefully at some of your quartz crystals, especially those which are most transparent and perfect, you will observe flaws inside some of them; such flaws and cracks are almost invariably found, upon careful examination, to be quite closely parallel, either to prism faces, or to one or more of the faces of the rhombohedron on the "pyramidal" termination. So it is that those very same internal flaws which you may have considered as spoiling the beauty of some of your otherwise perfect specimens, take on added scientific interest, and no longer detract so much from the enjoyment of your best rock crystal, or amethyst or smoky quartz. Perhaps some of your cut and facetted quartzes show imperfections of the same kind.

Quartz *does* possess well-defined cleavage directions, which are parallel to both the prism and the rhombohedron faces. Count up the directions, and you will find that altogether there are six. This would certainly seem to be an important fact to take into consideration when cutting facetted stones, spheres, or sections of crystals such as those which are used in radio transmitters.

Some quartz crystals show no traces of cleavage; they break with conchoidal fracture only. Such crystals undoubtedly owe their lack of cleavage development to a peculiarity in the internal structure of the quartz. For it is well known that many quartz crystals actually possess the property of rotary polarization; which means that polarized light which is passed through them is rotated either to the right or to the left, depending upon the internal structure of the particular crystal employed. Demonstrations made upon thin sections of such crystals, in polarized light, may, by the use of proper methods, actually show spirals which turn to the right or to the left. Such rotational characteristics are also indicated by the positions of the so-called tetartohedron faces "s" and "x", which are on the corners or solid angles between the prism and the pyramid faces. Normally there should be three "s" faces on *alternate* corners on the upper part of the crystal, and three others on the alternating corners on the lower part. And by their relations to the prism faces, experts can often discover, without cutting a crystal, whether it will rotate polarized light to the right, or to the left. But who could possibly expect quartz with such complicated internal structure to show good cleavage?

In addition to all this, a great number of quartz crystals show a complicated internal twinning structure. In fact, it may not be an extravagant statement to make, if it be said that most quartz crystals from certain localities are twinned. This means that a crystal which upon cursory examination looks like a simple individual, will show by external faces or markings, that it is really made up of two individuals which are intergrown so tightly that they have become completely merged into one. One of these may be a right-handed crystal and the other a left-handed one; and optical tests will confirm the conclusion. Such crystals are also likely to show the tiny "s" or "x" faces, or both of them, on *adjacent* corners of the crystal—so that if all of them were present, there would be 6 of them above, and 6 below, the equator of the crystal. Often the junctions of the two individuals can actually be seen as irregu-

lar lines extending vertically down the centers of the prism faces. How on earth could such crystals show good cleavage?

And certainly a very great part of the smoth-surface breaking which we find in the white quartz veins in the very old rocks is not due to true cleavage. These quartz masses have been under very great pressures during past periods of mountain-building and have suffered accordingly. The result is the appearance of flat surfaces on the quartz, which may be several inches, or even several feet, across. The quartz may break in larger or smaller rectangular blocks, square prisms, or even in thin slices which have parallel surfaces. These are due to pressure effects, as is sometimes shown by the development of sericite mica on them. It is usually impossible to tell whether or not the directions of the surfaces are parallel to any of the crystal cleavages; but in most cases they certainly are not. They are what are known to the geologist as joint planes, and as such are purely geological phenomena.

And so to you, as a collector, these hints are given, in the hope that the subject of cleavage in quartz may have new meaning and real scientific interest for you.

FIELD FABLES OF "ROCKY" MOORE

I supoase most uv yew hev heerd thet we hed a "air-raid' 'out here in Los Angeleese. Hundreds uv my admirers frum all over the kuntry has writ to find out efn I wuz still alive or mamed or sumthin. Well, sos ever body kin reelax, allow me to taik this opportunity to stait thet I am not ony well, I am sound in body an limb but I caint understand why my knees dont qwit shakin.' Is it possible I am a-gittin sum form uv palsy?

Well, enyway, I aint mutch worrid about air-rades fer I hev got a air-rade shelter secund to none. I got a big Keeokuk Geeod haff-buried in an alteration of pig-iron after magnetite an' it is so big I kin git "Chuck" an' "Waller" (them's my burrers) an' all my fambly in it—providin' me an the fambly taik turns. The way we worked out the turntakin' is this: I go in first to see thet everything is o. k. right at the first sign uv dainger an' then I kum out at the very instant we hear the all-kleer sireen—then my wife an fambly go in an stay while I investigate to see thet our house is still standin.' So doant worry no more 'bout me. Yore's Trooly—"Ol Rocky."

SUGGESTIONS WANTED

Editor "R & M":—

It has been my observation in the study, practice and treatment of psychiatry that too few mentally and neurotically afflicted persons have (among a great number of other abnormal factors) any systematized or organized play programme. I refer especially to playing with some avocation (or in common language "hobby") by which they get real satisfaction of creating something or accomplishing something. They have no diversion or relaxation from the realities of their vocation. Relaxation in play is of prime importance to normal living. Most mentally well balanced people have some relaxation in play.

Enough of this for an introduction to the main point of this epistle. I want you to give me your idea on how best to arouse an interest to take up some form of study and collection of minerals—how may they be induced merely to make a collection; or to pursue the art of the lapidarist; or perhaps only study and make a collection of crystals and minerals, etc. What sort of a fetching lure can be set for persons to entice them into it?

I shall be very grateful to you for you for your ideas.

C. F. Menninger, M.D.

Topeka, Kansas
March 27, 1942

Editor's Note: Readers are requested to send suggestions direct to Dr. Menninger, Menninger Clinic, Topeka, Kansas.

A CALIFORNIA FIELD TRIP

About a dozen members of the Northern California Mineral Society met at Middletown, Lake County, Calif., on Sunday, March 29th, to secure some specimens of pectolite in a near-by road cut. There was plenty for everyone. The mineral, rather nicely marked but in massive form and very hard, is more suitable for cutting cabochons than for cabinet specimens, as is the quality of the New Jersey pectolite. The matrix of the pectolite is also very hard.

After lunch the party proceeded to an old quarry on route 20 between Clear Lake and Williams, a tip having been given by Middletown rock-hounds that datolite and prehnite could be found there. None was discovered, however, even after much pick and sledge hammer work. One small heulandite was found, and some poor quality calcite.

The previous day two members visited the old Sulfur Bank mine on the shore of Clear Lake, north of the village of Lower Lake. This mine is being actively worked for cinnabar by open cuts, the old underground workings being too dangerous and far too hot. It is not possible for men to work below for more than a half hour, so all the excavating is done on the surface by Diesel shovels. There had been a cave-in and a truck that day had nearly fallen into an old tunnel. To step down a few feet into this cave-in was to find the sulfur gases unbearably hot.

Through the courtesy of A. F. Wolbert, general superintendent, they were permitted to collect and some very nice pieces of cinnabar crystals were found, as well as one group of sulfur crystals, and some small but beautiful clusters of gypsum crystals in rock cavities which fluoresce attractively. Also, some basalt covered with what appears to be molten pyrite—if such a thing is possible—some being white-gold in color and some with spectrum colors; close to the hot cave-in one side of whole boulders were thus covered.

Some members of the Northern California Mineral Society "prospecting" in an old quarry in Colusa County on Route 20 between Clear Lake and Williams, Calif.

One specimen found by the writer has not yet been identified. It consists of a group (in a porous matrix) of hundreds of brilliantly polished 'needle tips" pointing in all directions and of steel color.

The cinnabar samples are coatings on disintegrated basalt, which is easily broken or crumbled by the hands. The crystals are of a beautiful red, the brilliancy of which is brought out strongly when under a strong glass. They are soft, however, and a finger touch smears them flat. Mostly they appear to be flat triangles.

T. O. L.

LATTER DAY MINE SALTING

By **EUGENE W. BLANK**, Jersey City, N. J.

Every mineral collector is familiar, I believe, with the practice covered by the term "mine salting." The classical example, as usually found in works of fiction, involves a confidence man, an unscrupulous chemist or assayer, and invariably a third party, the victim, blessed with what appears to the prejudiced confidence man as a surplus of money.

The plot is simplicity itself; so simple it is little wonder it so often works.

The confidence man secures an abandoned gold mine, loads a double barreled shotgun with some gold dust and fires away at the working face of the mine. Thereupon he has a real gold mine in which the ore is so rich the gold can actually be seen glittering in the rock. Next a chemist or assayer is found who is willing to vouch for the value of the ore from the mine and the scene is laid for shearing the victim.

To draw parallels there is a lot of mine salting going on at the present time. In most cases it is being done by collectors innocent of any desire to deceive. It is due primarily to the ease with which several mines or quarries can be visited by the same collector on the same day in his automobile.

A large number of duplicates may be collected at the first locality, and then upon reaching a second locality, having had time to think matters over enroute the specimens perhaps do not appear any too desirable and are accordingly thrown away. Or perhaps the second locality furnishes finer specimens of the same mineral than were collected at the first locality. Here again, in many cases, the minerals are dumped out upon the ground, in many cases upon the dumps which later collectors will painstakingly search. In referring to the same mineral I have reference to minerals that may appear much the same, particularly to amateurs, but carry trace elements and associates that make a great scientific difference to the expert colletcor.

The expert will reply that he wouldn't be fooled. He is equipped by knowledge and experience to spot the differences but mineral collecting is in the main supported by a vast number of amateurs and the literature is bound to reflect new finds at specific localities that are incorrect and will never be found again unless someone obliges by transferring a good many pounds of minerals from some other locality.

The moral is obvious. Take time at a locality to select only what you really want; sufficient specimens for your own collection and some duplicates for your neighbors or fellow collectors. Don't carry a surplus away simply because the mineral is plentiful and you have the car along. But most important of all if you can't resist trying to take the locality home don't deposit parts of it at the next mine or quarry where it will mislead other collectors.

THE FUTURE OF MUSEUM MINERAL COLLECTIONS

With the great change which has taken place and which will continue in American social and political philosophies, privately and publicly supported institutions will have to keep step. The day of wealthy patrons of art and science has about reached its end; the public for whom the museum collections are assembled and maintained will now be forced to make their own contributions for the support of their institutions.

In the United States there are a number of great collections of minerals, most of them in museums. In practically every case these collections were started by private individuals who, after their days of collecting were nearing an end, arranged for their collections to end in museums. The Roebling and Canfield Collections, now in the U. S. National Museum at Washington, D. C., and the Spang and Bement Collections, now in the American Museum of Natural History, New York City, are examples. The superb mineral collections of these institutions as well as those of the Philadelphia Academy of Natural Sciences and the Field Museum of Chicago are not due to the pride, interest and generosity of the general public; they are due to the foresight and generosity of a few wealthy individuals. In other countries, many national museums have been developed largely through the national pride of their citizens. It is said that any British subject is proud and pleased to enrich the British Museum through the donation of the finest specimen he may obtain on his travels throughout the world.

The attitude shown by the average Britisher is to be commended. After all, a museum, whether in England or in the United States, is a public institution, whose aim is to encourage interest in mineralogy (or any other subject) and to serve as a repository for specimens of the finest type, of long abandoned mines or quarries, or for study purposes. Many mines, especially those that have long since been exhausted, are often of great historic interest. The United States is the richest country in the world. In 1936, Dr. John W. Finch, Director of the U. S. Bureau of Mines, announced that two-thirds of the nation's wealth comes from minerals.* In view of the tremendous indebtedness that we owe to minerals, it would seem fitting and proper for every American to show a keen interest in minerals in general and to those in our great institutions in particular. Unfortunately many an American does not even know what a mineral is— the average citizen thinks it is something we eat in food.

Though the average American may know very little about minerals, interest in them is mounting rapidly. The curators of many museums have developed special knowledges of desirable specimens, ways of exhibiting them, and tricks to interest the public. It is their duty and their pleasure to enlarge the collections through the acquisition of specimens and to improve them through steady weeding out of inferior material and replacing it by better. Minerals are intensely interesting and fascinating so that curators enjoy working with them and in turn the curators try to inspire others, the general public, who visit their displays.

But what of the future? It is not enough that a curator arrange and rearrange the specimens which he now has and which had been obtained through some fortunate, wise generosity of a by-gone day. The collection must be kept alive and constantly renewed by the additions of newer finds. Some minerals deteriorate and in time lose their brightness and color, realgar for instance. In other cases new finds make earlier specimens look pretty poor by comparison, take the new augelites from California and the new diaboleite from Tiger, Ariz., for examples. A curator who is on the job must have examples of these new finds. Then, too, there are many minerals new to science which are found each year; these too must be acquired to maintain the

*Two-thirds of the Nation's Wealth comes from Minerals, *Rocks and Minerals*, March, 1936, p. 33.

completeness of representation. But how to do it, that is what keeps a curator continually in a quandary?

There was a time when every museum had funds to buy whatever was needed or if that failed, the curator had some rich patron to whom he could turn for this or that. Today, unfortunately, this situation no longer exists, many museums are struggling to maintain their extensive buildings without any thought of serving their public through the maintanance of exhibits. Few people realize this situation. Many have the false idea that the possession of a large and expensive plant presupposes that the occupants have untold riches. A large plant is now likely to be more of a detriment than an asset; how many mansions are now being torn down just to save taxes, and what good is a Rose Bowl if no football can be played there? This thoughtless assumption of wealth has in recent years worked to the detriment of large public institutions. Not only are many museums without funds for the acquisition of specimens but the assumption of their riches make sellers of those who should be donors—these sellers often place a higher value on their specimens than what is asked if offered to private purchasers. Do they ever ask themselves where the museum is to get the money to purchase their large and exorbitantly priced specimens—too often priced to bring all the traffic will bear rather than any sensible, reasonable figure based upon supply and demand?

Mineral specimens offered to collectors fall into two categories; specimens actually collected for sale to collectors and specimens which are more or less by-products of the real activity. Examples of each are easy to find; the large topaz crystals brought recently into this country from Brazil fall into the first category, the wonderful azurites and malachites of Bisbee, Ariz., fall into the second. What is their value? How should it be ascertained? The cost of obtaining the specimens, the danger and difficulty involved, and the good fortune of finding and getting something which might not turn up again in another lifetime should all be included. The sale price of the specimens of the first category depends upon these things; the return must be large enough to justify the risk and the expenditure, it must also be a lure to others. No private collector has the space for such large specimens and few have the means to purchase them. Logically. therefore, these specimens should be acquired by public institutions, for public enjoyment; they should be paid for from public funds. A public subscription would be one way in raising funds for the purchase of museum specimens.

The second category is another proposition entirely. In the first place the specimens obtained are not the primary object of the operations; they are secondary. Specimens obtained from mines and quarries really belong to the natural resources of the country and a nationalization of mining would undoubtedly see to it that such specimens went into the possession of public institutions, just as a meteorite found on government land belongs to the U. S. National Museum. The mining and quarrying companies owe the public that consideration—they should save and preserve unusual specimens, which often have a value greater than the ore content, for the public good. Some companies have subscribed to this belief, and many museum collections have been enriched by contributions from these enlightened operators. But most companies care not about the minerals found in their workings (which are not ores) and even permit a fringe of dealers to live on the pickings of their operations or their miners to high-grade stopes for specimens which are sold to dealers who in turn resell to collectors. It cannot be denied that such selection and sale by miners supplies an incentive to the preservation of valuable specimens which would otherwise be lost unless the company itself works out a system of rewards, but that is too Utopian a dream.

The dealers serve a useful function—they preserve specimens and they foster the science by making it possible for the average person to obtain specimens he could not otherwise acquire without many miles of travel, perhaps not even then.

The dealer is essential to the hobby of mineral collecting, but he must exert caution before he kills the goose that lays the golden eggs.

The mineral collector and the museum curator fall into the same class when it comes to buying specimens; it is just like bying a diamond. One would not, if he were sober, buy an expensive diamond from a small dealer about whom he knows nothing—that's why Fifth Avenue jewelers stay in business. So it is with minerals. An advertisement is seen in *Rocks and Minerals* and an approval selection is requested. If the prospective purchaser is a museum curator he will naturally ask for the best specimens; if a private collector, he will ask for modest specimens. He receives a selection and sees some fine specimens but how does he know if they are worth the price or if they are the best that have been found? The curator here has an advantage, he has the records of his predecessors, he lives with minerals all day, and he knows what he has from the same and other localities. Thus the curator can easily determine the quality of the new assortment received but he does not know if they are worth the price asked. How does he know how many specimens were found —that some other dealer hasn't finer material—or that the next blast will not uncover ten times as much again? The first is a guarded secret of the seller. unfairly guarded, incidently. The second he should know, and after all, it's to the other dealers' advantage to let him know. The third question no one can answer until the mine is closed and perhaps not then. But the curator can have or not have confidence in the seller. When he has confidence in the seller he knows that the price, if too high, will be adjusted; that later finds of better material may be bought with credit from returned earlier, poorer material. Not so with someone he does not know and in whom he has no confidence. The curator soon learns to recognize the dealer who has no love for his wares but who is interested only in getting the maximum price.

Disregarding the dealers' foibles, however, think of the position of the museum curator today. Faced with dwindling funds he now has the added responsibility of protecting his collections from new dangers of bombing and still keeping up his museum work—an important endeavor for the maintenance of civilian morale as shown by British experience. With the war and higher taxes there will be even fewer dollars for the acquisition of new specimens. And worse still, the day is not far distant when a museum will be forced to suspend purchases of specimens if public funds are not forthcoming. If this day ever comes, then the museum curator will have to depend entirely upon public generosity and pride for the maintenance of the mineral collections. If this should fail to produce results, then the curator has either failed in his job or public interest is so slight as not to justify the continuance of mineralogical exhibits. It is inconceivable that the collectors and dealers of America should be so mercenary and short-sighted as not to support their public institutions or that mining and quarrying companies, once the museum's dilemma is brought to their attention, would not cooperate to the fullest extent. It may not be amiss to suggest to those thoughtless collectors and dealers, who often take up a curator's time in having unknown minerals identified, that they should reciprocate the courtesy and help given them by donating some nice specimens to the museum. The museums, therefore, need public support, cooperation and sympathy if they are to remain in their preeminent positions in the field of mineralogy. And the museums also need the fullest support and cooperation of all collectors, mining and quarrying companies, and other individuals and concerns who would donate the finest specimens from their collections or operations so that the American mineralogical museums may not only function and carry on for ages to come but should be the most outstanding of the whole world.

ROCKY MOUNTAINS CONVENTION

(Preliminary Announcement)

Why not plan your vacation to include the second annual convention of the Rocky Mountain Federation of Mineral Societies, to be held in Salt Lake City, Utah, August 29-30, 1942.

Few places in the world present a greater array of outstanding geological features, so readily accessible, as do the Wasatch and Oquirrh Mountains which mark the east and west boundaries of Salt Lake Valley.

All eras from Archeozoic to the present are well represented. Great faults and other diastrophisms of major proportions are evident everywhere. Igneous rocks of many types with corresponding lava flows, pumice beds and volcanic cores of unusual types are part of the great scene, about which lashed the mighty Lake Bonneville. of which Great Salt Lake is the remnant.

Within easy reach of town are two of the world's great mining camps where a great variety of mineral specimens are available, especially for the mineralogical student.

The Utah section of the Federation is formulating plans to accommodate as many varied interests as possible, by presenting a program of optional trips into the field or about the city. The premier Utah Copper Mine and Great Salt Lake will be featured, with other optional trips to choose from if so desired.

Close at hand in our University of Utah Museum, are mounted specimens of large dinosaurs, the Brontosaurus, Stegosaurus and the Diplodocus, all worth the time of those who have not seen these monster bones. Then there are public and private museums and mineral collections as well as venders and traders of specimens.

Enroute, one might plan a side trip to Bryce or Zion Canyons, Dinosaur National Monuments, Arches and Bridges National Monuments or Timpanogos Cave.

We hope war conditions will not interfere with this convention. The Utah section will be happy to greet you.

Collectors' Tales

SEWING MACHINE CONCENTRATION

While making several prospecting trips to Monongalia County, W. Virginia, in 1915, we met a student who was taking a course in geology in the State University at Morgantown. He was a very likeable fellow and was doing very well in his classes, so we thought his future was secure as a student for graduation. However, we were very much surprised, later, when we learned that he had failed in some of his work.

We believed there was some understandable reason for this failure, so we called him to visit us in our hotel. In answers to our "How come?" he said, "I can't concentrate on my home work." We advised him to buy a second hand sewing machine, to remove all working parts except the large wheel and foot tread and to use it as a table, working the machine with his foot while studying his lessons.

We found, on subsequent visits to Morgantown, that this machine was all he needed to help him through one of those periods of formative years.

Since 1915, much has been written and done about this nervous tension. In some class rooms, during examination, smoking is permitted for the students, who have the habit. Some people can concentrate with radios going full blast, while others must have absolute quiet, et cetera.

Walter S. Amos

Clubs Affiliated With the Rocks and Minerals Association

ARIZONA

Mineralogical Society of Arizona
Geo. G. McKhann, Sec., 909 E. Willetta Street, Phoenix.
Meets at the Arizona Museum in Phoenix on the 1st and 3rd Thursday of each month.

CALIFORNIA

East Bay Mineral Society
Miss Marjory Welch, Sec., 3268 Central Avenue, Alameda.
Meets on the 1st and 3rd Thursdays of each month (except July and August), at 8:00 p.m., in the Lincoln School Auditorium, 11th and Jackson Sts., Oakland.

Northern California Mineral Society, Inc.
L. M. Demrick, Sec., 424 Ellis St., San Francisco.
Meets on the 3rd Wednesday of the month at the Public Library in San Francisco.

Southwest Mineralogists
Mrs. Pearle Arnold, Cor. Sec., 2132 W. 76th St., Los Angeles.
Meets every Friday at 8:00 p.m. at Manchester Playground, 88th and Hoover Sts., Los Angeles.

COLORADO

Canon City Geology Club
F. C. Kessler, Sec., 1020 Macon Ave., Canon City.
Meets on the 1st and 2nd Saturdays of each month at 9:00 a.m. in the High School Building, Canon City.

Colorado Springs Mineralogical Society
Mrs. Helen S. Caldwell, Secretary, 221 N. 14th, Colorado Springs.
Meets usually at the Lennox House, Colorado College Campus, Colorado Springs, on the 2nd Monday, of each month at 7:30 p.m.

CONNECTICUT

Bridgeport Mineral Club
Mrs. Julia Walker, Sec., 55 Eaton Street, Bridgeport.
Meets in the Bridgeport Public Library on the 3rd Monday of the month.

Long Hill Mineral Club
Eugene F. Robinson, Sec., R. F. D. No. 4, Box 237, Bridgeport.
Meets on the 4th Tuesday of each month at 8:00 p.m., in the Hawley Memorial Library, Long Hill.

Mineralogical Club of Hartford
Frank P. Rockwell, Secretary, 88 Fern St., Hartford
Meets the 2nd Wednesdays of each month, at 8:00 p.m., at 249 High St., Hartford.

New Haven Mineral Club
Mrs. Lillian M. Otersen, Sec., 16 Grove Place, West Haven.
Meets on the 2nd Monday of the month at the Y. W. C. A. on Howe St., New Haven.

IDAHO—OREGON

Snake River Gem Club
Mrs. A. Ingraham, Sec., Box 714, Ontario, Ore.
Meets alternately in Payette, Idaho, and Ontario, Oregon, (two small cities on the Snake River) on the 3rd Tuesday of every month.

ILLINOIS

Junior Mineral League
William Dacus, Sec., Morgan Park Junior College, 2153 W. 111th St., Chicago.

MAINE

Maine Mineralogical and Geological Society
Miss Jessie L. Beach, Sec., 6 Allen Avenue, Portland.
Meets last Friday of the month at 8 p.m., at the Northeastern Business College, 97 Danforth Street, Portland.

MARYLAND

Natural History Society of Maryland
2103 N. Bolton Street, Baltimore.
Office hours, Tuesdays and Fridays, 10:00 a.m. to 5:00 p.m.

MASSACHUSETTS

Boston Mineral Club
Mrs. Grace G. Dearborn, Sec., 40 Mt. Vernon St., Cambridge.
Meets on the 1st Tuesday of the month at 8:00 p.m., at the New England Museum of Natural History, 234 Berkeley St., Boston.

Connecticut Valley Mineral Club
Mary E. Flahive, Secretary, 96 South St., Florence
Meets on the 1st Tuesday of each month at 8 p. m. at various institutions in the Connecticut Valley.

MISSOURI

National Geologist Club
Mrs. D. P. Stockwell, Pres., Mt. Olympus, Kimmswick.

NEVADA

Reno Rocks and Minerals Study Club
Mrs. Rader L. Thompson, Sec., Box 349, R2, Reno.
Meets on the 1st Wednesday of each month, at 7:30 p.m., at the Mackay School of Mines, Reno.

Western Nevada Mineral Society
Miss Helen Griffing, Sec., 231 Mary St., Reno.
Meets on the 2nd Wednesday of each month at 7:30 p.m., at the State Bldg., Reno.

NEVADA

Mineralogical Society of Southern Nevada
Paul Mercer, Acting Secretary, Bureau of Mines, Boulder City.
Meets on the 2nd Monday of each month at Las Vegas High School and on the 4th Monday of each month at Boulder City High School—both meetings at 8:00 p.m.

NEW JERSEY

Newark Mineralogical Society
Louis Reamer, Secretary, 336 Elizabeth St., Orange.
Meets on the 1st Sunday of the month at 3 p.m. at Junior Hall, corner Orange and North 6th Streets, Newark.

New Jersey Mineralogical Society
O. B. J. Fraser, Sec.-Treas., 27 Stoneleigh Park, Westfield.
Meets on the 1st Tuesday of the month at 8 p.m. at the Plainfield Public Library.

NEW MEXICO

New Mexico Mineral Society
R. M. Burnet, Sec.-Treas., Carlsbad.

Society of Archaeology, History and Art
Carlsbad.

NEW YORK

Chislers, The
Miss Evelyn Waite, Sponsor, 242 Scarsdale Road, Crestwood, Tuckahoe.

Queens Mineral Society
Mrs. Edward J. Marcin, Sec., 46-30—190th Street, Flushing.
Meets on the 1st Thursday of the month at 8 p.m. at 8501 - 118th St., Richmond Hill.

OKLAHOMA

Oklahoma Society of Earth Sciences
W. P. Smiley, Sec.Treas., 229 W. Jefferson Street, Mangum.
Meets on the 2nd Tuesday of each month, at 7:30 p.m., at the Historical Museum, Mangum.

PENNSYLVANIA

Thomas Rock and Mineral Club
Mrs. W. Hersey Thomas, Pres., 145 East Gorgas Lane, Mt. Airy, Philadelphia.
Meets on the 3rd Friday of each month, at 8:00 p.m., at the home of its president, Mrs. Thomas.

VERMONT

Mineralogical Society of Springfield
Victor T. Johnson, Sec., 11 Elm Terrace, Springfield.
Meets on the 3rd Wednesday of each month at 8:00 p.m. at the homes of members.

WASHINGTON

Gem Collectors Club
Mrs. Lloyd L. Roberson, Sec., 522 North 70th Street, Seattle.
Meets on the 1st and 3rd Tuesday of each month (except during the summer) at 8:00 p.m., at the Y. M. C. A.

Washington Agate and Mineral Society
Monroe Burnett, Sec., 802 S. Central St., Olympia.
Meets on the 1st Monday of the month, at 7:30 p.m. at the home of some member.

WISCONSIN

Wisconsin Geological Society
Paul Ziemke, Sec., 2032 W. Keefe Ave., Milwaukee.
Meets on the 1st Monday of each month at 8:00 p.m., at the Public Museum in Milwaukee.

With Our Dealers

Schortmann's Minerals of Easthampton, Mass., have just released two new catalogs, Nos. 6 and 7. No. 6 is a general catalog containing 48 pages and featuring minerals, collections, hammers, books, diamond saws, etc. A number of good illustrations add greatly to the pleasing appearance of this publication. No. 7 is a special catalog of 20 pages featuring choice minerals of which "one of a kind only" are in stock. These catalogs are 3½ x 7 inches in size (made to fit a collector's pocket). Good minerals are going to be scarce this year so collectors should send for these catalogs immediately and order specimens wanted without delay.

Wyoming Minerals of Laramie, Wyo., announces the acquisition of some interesting fossil hair coral. Collectors should order specimens immediately as the supply is limited.

Ward's Natural Science Est., Inc., are now located in their new home at 3000 Ridge Road East, Irondequoit, a short distance from the Rochester city line. Their mailing address is still the same as before—P. O. Box 24, Beechwood Station, Rochester, N. Y.

Club and Society Notes

New York Mineralogical Club

American Museum of Natural History, New York, N. Y., Wednesday, March 18, 1942.

The meeting was convented at 8:10 P. M.

Mrs. E. L. Sampter and Mr. Eberhard von Schroetter were elected to membership. The following nominating committee was elected:—

Miss G. Richards
Mr. A. Karlsson-Ygger
Mr. A. J. McDermid
Mr. O. I. Lee
Mr. G. E. Ashby

A vote of thanks was extended to Dr. Pough and his assistants Mr. H. R. Lee and Mr. M. A. Northup for their work in giving the recently completed course in mineralogy.

Mr. Grahl announced for the excursion committee that questionnaires returned so far favor a spring trip to Bedford.

Mr. Trainer then introduced the speaker, Dr. Clifford Frondel of Harvard University, whose subject was "Mineral Inclusions."

Regarding the history of the subject, Dr. Frondel mentioned that mineral inclusions were noted by the Romans, and that the physicist, Robert Boyle, studied them, being the first to point out that crystals grow by accretion on their surfaces rather than forming instantaneously as had been previously supposed. Attention was also called to a book published in German in 1854 under the title of "Inclusions of Minerals in Crystallized Minerals."

Asterism in phlogopite was next discussed. This takes the form of a multirayed star caused by scattering of light from microscopic inclusions of rutile oriented most commonly either parallel to, or normal to, the percussion figure. It was demonstrated that this scattering takes place so as to cause a ray in a direction normal to that in which the inclusions are oriented. Slides of various types of stars were shown, as well as one showing the rutile inclusions. The position of the rays depends upon the orientation of the inclusions, 17 different positions having been noted, whereas the intensity of each ray depends upon the number and size of inclusions in the corresponding direction.

The rutile inclusions were formed by exsolution of a small percentage of titanium from the phlogopite where it had originally been in solid solution, occupying lattice positions usually filled by aluminum.

Inclusions of rutile needles oriented in such a way as to produce asterism seem to be peculiar to phlogopite among the micas, and are very rarely found in muscovite, biotite or lepidolite.

Other instances of crystal inclusions were discussed and illustrated with slides, among them being:

Staurolite in muscovite
Tourmaline in muscovite
Hausmannite and an unknown mineral in manganosite by exsolution
Garnets penetrated by acicular zircon in muscovite
Garnets with pyrite and an iron sulfate in muscovite
Hematite in muscovite as large reticulated bands, feather-like crystallites, and highly skeletonized crystals.
Magnetite crystals in muscovite
Manganosite in periclase by exsolution

Asterism also occurs in other minerals such as rose quartz, chrysoberyl and sapphire and is, as with phlogopite, caused by oriented inclusions of microscopic acicular crystals of rutile, actinolite, tourmaline, other minerals, or simply empty cavities.

A large ball of asteriated rose quartz was exhibited. This showed two six-rayed stars each radiating from the opposite poles of the optic axis with bright spots along the rays and between the rays at the poles of the principal crystal faces of quartz.

A vote of thanks was extended to the speaker and to Mr. G. E. Ashby who had supplied part of the specimens discussed.

Mr. Kuenstler exhibited several specimens from the Calvert Collection.

The meeting was adjourned at 9::35 P. M.

M. A. Northup
Secretary

New Jersey Mineralogical Society

A regular meeting of the Society will be held on Tuesday May 5th, at 8:00 p.m., in the Plainfield Public Library, Plainfield, N. J. The main program will be an illustrated talk by the dean of mineralogists, Dr. Charles Palache of Harvard University. Dr. Palache's subject will be the Mineralogy of the Mammoth Mine of Arizona.

Another meeting of the Society will be held on Sunday, May 17th, at the Library at 2:30 p.m. The program for this meeting has not yet been announced.

Colorado Springs Mineralogical Society

The following are the officers who have been elected to carry on the activities of the Society during the current year:

President—Mr. William E. Davis, 1340 N. Wahsatch

Vice-President—Mr. Tim Anglund, 428 E. Del Norte

Secretary-Treasurer—Mrs. Helen S. Caldwell, 221 N. 14th Colorado Springs, Colo.

Connecticut Valley Mineral Club

Headquarters: Museum of Natural History
Springfield, Massachusetts

The following officers were elected at the March 17th meeting of the club:

President—Frank W. Hess, 87 Villa Parkway, Springfield, Mass.

Vice-President—Richard Kellogg, 61 Euclid Ave., Springfield, Mass.

Secretary—Mary E. Flahive, 96 South St., Florence, Mass.

Librarian—Mary E. Flahive, 96 South St., Florence, Mass.

Treasurer—Leo D. Otis, 12 Clark St., Westfield, Mass.

Mineralogical Club of Hartford

A new slate of officers were elected at the March meeting to conduct the activities of the Society during 1942. They are:

President—Mr. Ralph F. Hills

Vice-President—Mr. Fred W. Webster

Secretary—Mr. Franklin P. Rockwell

Treasurer—Mr. George P. Robinson

All field trips for the 1942 season are planned to localities within 25 miles of Hartford. On Sunday, May 17th, the 2nd field trip of the year will be to the Balf Quarry, Newington, Conn.

Newark Mineralogical Society

The 208th Meeting of the Society was held in the Brewster Room, Junior Hall, 468 Orange St., Newark, N. J., on Sunday, April 5th, 1942. The meeting was called to order by the President, Mr. Vincent Giordano. The speaker for the afternoon was Dr. Daniel O'Connell, of C. C. N. Y., whose very interesting subject was his recent trip to the West (illustrated with pictures, etc.)

Louis Reamer, Sec.

Bibliographical Notes

CALIFORNIA JOURNAL OF MINES AND GEOLOGY

The State Division of Mines, Department of Natural Resources, under the direction of Walter W. Bradly, State Mineralogist, announces the release of the July, 1941, issue of the CALIFORNIA JOURNAL OF MINES AND GEOLOGY, being Chapter 3 of State Mineralogist's Report XXXVII—123 pages, illustrated by photos, cuts, and maps.

This chapter is devoted primarily to a report on the Mines and Mineral Resources of Nevada County, by C. A. Logan. This includes a detailed paper on mining methods and costs of the Lava Cap Gold Mining Corporation, Nevada City, by John W. Chandler, reprinted from U. S. Bureau of Mines Information Circular 7164; and an article on "The Price of Gold" by Arthur B. Foote, Mining and Civil Engineer, Grass Valley. A map of the western portion of Nevada County showing mining claims *and* a large-scale map of the Grass Valley and Nevada City district showing claims, accompanying the report.

This is followed by the Geologic Branch Current Notes and four special articles, as follows: "History of the Names Cobalt and Nickel" by W. B. Winston; "Aluminum and Quartz" by George L. Gary; and the new *mining laws* passed at the last session of the Legislature.

The usual notes on Statistics, Museum, Laboratory, and Library are included.

Price, including maps—60 cents postpaid. California residents please add 2 cents sales tax.

The maps are also sold separately at 25 cents each, plus one cent sales tax.

All publications of the State Division of Mines are for sale at its offices: San Francisco, Los Angeles, and Sacramento. In the Redding office they are available for reference only.

CALIFORNIA MINERAL PRODUCTION

State Mineralogist, Walter W. Bradley, announces that Bulletin No. 121 of the Division of Mines, of the Department of Natural Resources is just off the press and ready for distribution. The title of Bulletin No. 121 is CALIFORNIA MINERAL PRODUCTION AND DIRECTORY OF MINERAL PRODUCERS FOR 1940. This bulletin is one of the series of annual statistical reports which have been issued for many years. It contains detailed data covering the amount and value of metallic and non-metallic minerals, subdivided as to fuels, metals, structural materials, industrial materials and salines, both by substances and by counties together with various charts and graphs. A directory of all producers (except for natural gas and petroleum) which adds much to its value is also included. The properties and uses of the more-than-fifty mineral substances produced are treated briefly, the whole comprising a condensed compendium of information on the commercial minerals of the State. With each mineral substance there is a table giving total recorded annual production, and many with a short historical outline.

Bulletin No. 121 contains 227 pages, and 12 figures, bound in paper covers. It may be purchased from the California State Division of Mines, Ferry Building, San Francisco, for 80 cents plus 2 cents sales tax for California residents. It may also be obtained from the offices of the Division at: State Office Building, Sacramento; State Building 217 West First Street, Los Angeles; and may be consulted at our office in the Chamber of Commerce, Redding.

CLASSIFIED ADVERTISEMENTS

WORLD'S BEST WANT AD. MEDIUM FOR MINERALS

Rate 5c per word; minimum 10 words. Remittance must accompany copy in all cases. Advertisers must furnish satisfactory references before their advertisements will be inserted. Forms close the 1st of every month.

BOOKS

Handbook For the Amateur Lapidary by J. H. Howard, 16 chapters covering all phases of gem cutting and polishing, 141 pp., 14 illus., price $2.00. J. H. Howard, 504 Crescent Ave., Dept. R., Greenville, S. C.

How to Collect Minerals. By Peter Zodac. A guide book for the collector, 80 pp., 15 ills., $1.00. Rocks and Minerals, Peekskill, N. Y.

History and Geology of the Royal Gorge, an illustrated souvenir booklet with maps and drawings locating 54 minerals for touring collectors. 50c postpaid. F. C. Kessler, Canon City, Colo.

Art of Gem Cutting—Just out. Latest and most complete book for the lapidary. $2.00. Price list of American Gem Rough free. Sample sack 10c. Gem Exchange, Lake Bluff, Ill.

Fluorescence of Minerals by Chester Slawson. Excellent color plate of the Cranbrook display, plus text. 35c postpaid. Cranbrook Institute of Science, Bloomfield Hills, Michigan.

FOSSILS

Fossils, Minerals, Old Arms, Indian Beaded Trappings, prehistoric specimens, general line of curios. Lists 10 cents. N. E. Carter, Elkhorn, Wisc.

EXCHANGES

I WANT TO EXCHANGE MINERALS. CAN OFfer fayalite, forsterite, thorite, triphyllite, heterosite, manganapatite for good specimens from other localities. Gunnar Bjareby, 147 Worthington St., Boston, Mass.

MINERALS

Scott Rose Quartz Co.—Rose Quartz, Black Hills specimens, all kinds and colors; for rock gardens, cabinets, etc. Boxes: 24 specimens, **$1.00; 18 specimens, 50c; 15 specimens, 35c.** Postage paid. Box 516, Custer, S. Dak. Send stamp for price list.

Beautiful Opals-Direct from Australia. Lapidaries Parcel, 10 ounces cutting opal, (about 50 stones) $10.00. Collectors specimens—good attractive parcels, $5.00, $10.00. Dozen small black opals $5.00. 10 ounces small opal chips $5.00. Illustrated catalogue No. 47 free. Natural History Books (thousands), lists free. Norman Seward, "Opal House," Melbourne, Australia.

Minerals, Fossils, Indian Relics, Books, Coins. Curios, Stamps. Old Glass. Catalogue 5c. Indian Museum, Osborne, Kansas.

Large dark purple amethyst crystals containing gold. 75c to $1.50 postpaid. Monroe Mineral Store, Monroe, N. Y.

Top Quality Brecc.a Jasper—Strong, clean, excelling all other Jaspers for beauty. Suitable sizes for all purposes. 40c per lb. Slabs 8c per inch. Wholesale to dealers. Leo Ferris, San Miguel, Calif.

Colorado Minerals and Gem Stones. Rare—beautiful—different specimens. For the collector and dealer. Send 10c for 25c fluorescent fluorspar specimen and list. Colorado Mineral Exchange, Salida, Colo.

Millerite, Jelinite, Oolitic Limonite, Grunerite—Benedict P. Bagrowski, 1014 Vermont, Lawrence, Kansas.

Utah Jewels: New Calcites, 75c to $5.00. Superb Quartz & Pyrites. 50c to $5.00. Limited. The Berryman Menage, 412 East 9th South, Salt Lake City, Utah.

New England minerals for sale or exchange. Correspondence solicited. Rudolf C. B. Bartsch, 36 Harrison St., Brookline, Mass.

Five Different Ozark Mountain Cutting Materials 5 pounds for $2.00, postpaid. John Jennings, Eureka Springs, Ark.

Cutting Agates, Woods, Minerals—Bishop's Agate Shop, North Bonneville, Wash.

Chinese Carvings and Cabochons in Jade and other stones. Prices reasonable. Send for price list. Chas. O. Fernquist, N. 4108 Walnut, Spokane, Washington.

FLUORESCENT MINERALS

Choice Fluorescent and Phosphorescent Polished Slabs of unsurpassed beauty with cold quartz lights, 2x3 to 4x6, $1.00 to $6.50, depending on material. All highest quality. Cabinet specimens. Edwin Skidmore, R.F.D. 1, Box 247, Westfield, N. J.

Fluorescent calcite mixed with sphalerite and galena. I have been mining specimens for ten years and this is the only calcite I have found which will fluoresce under the black bulb or quartz light and only a small quantity available. For sale or trade for good willemite or wernerite. J. A. Robertson, Box 105, Baxter Springs, Kansas.

Fluorescent Mexican Fluorspar—Prices on request. A. J. Wallace, 118 Lawnside Avenue, Collingswood, N. J.

SPECTROSCOPES

Spectroscope For Quick Ore Analysis $2.50. Cuffing Sons, Campbell, Calif.

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